

to the existence of many peculiar forms of land-shells on the island; and Wollaston collected these with such zeal, that in a very short time he had obtained examples of a great many more species than had fallen to the lot of Mr. Lowe during several years' residence in Madeira. A descriptive account of these shells, and of others obtained by him in other Atlantic islands, was his last completed work, and will, we hope, appear shortly.

This notice has already extended to such a length that it will be impossible to refer particularly to any of Wollaston's scattered papers. From 1846 until last year he was a frequent contributor to our pages, in which many of his best papers appear. Others, of equal value, will be found in the Transactions of the Entomological Society, in the 'Journal of Entomology,' and in the 'Entomologist's Monthly Magazine.' Altogether he published about 50 separate papers, nearly all relating to Coleoptera.

When we consider that for 30 years of his life Wollaston was always in a most delicate state of health, the amount and the quality of the work done by him is at first sight surprising. But it may be that the very weakness of constitution which all his friends deplored was really to some extent the cause of his success, by preventing his going much into society, where his kindness and geniality must have made him a favourite, and compelling him to live for the most part in a retirement which afforded him so many opportunities of devoting himself to the patient and minute research by which, coupled with the power which he eminently possessed of taking broad and philosophical views of his results, his reputation was mainly built up.

On the Orthonectida, a new Class of Animals Parasitic on Echinodermata and Turbellaria. By M. A. GIARD.

The little Ophiuran, *Ophiocoma neglecta*, sometimes contains a singular parasite which may serve as the type of a whole group of animals of very curious organization and hitherto almost unknown. The following are the circumstances under which this parasite is met with. *Ophiocoma neglecta* is an Ophiuran with condensed embryogeny, or viviparous. The incubatory cavity, situated in the aboral part of the disk, communicates freely with the exterior; for the most advanced embryos contained in this cavity frequently present upon their arms a pretty *Vorticella*, which occurs almost always upon the arms of the parent animal. On tearing open the disk in order to extract the embryos from it, we find it, in certain individuals, filled with a multitude of animals like large ciliated Infusoria, which traverse the field of the microscope in a straight line and with the rapidity of an arrow. These animals occur of two forms, which I shall name provisionally the *elongated* and the *ovoid form*. In both they are simple *planulæ*, that is to say, organisms composed only of two layers of cells—an exoderm or outer layer of ciliated cells, and an endoderm consisting of larger cells bounding a linear central cavity with no buccal aperture or anus. Notwith-

standing this low organization, the body is metamerized, and the metameres even present remarkable differentiations. The first ring terminates anteriorly in a blunt cone and bears a tuft of rigid setæ. It is followed by a cylindrical ring of the same length, the whole surface of which is roughened with papillæ, apparently disposed in ten longitudinal rows; this is the only part of the body which does not present vibratile cilia. The third ring is larger than the first two taken together; it widens gently towards its posterior extremity. The fourth metamere is of the same dimensions as the papilliferous ring; it is followed by a terminal ring, furnished with longer cilia at its posterior extremity, conical and subdivided into two metameres less distinct than the preceding ones. Such is the elongated form. The last rings form a sort of club with which the animal beats the water, independently of the movements of the cilia, and by sudden blows which one might think due to the action of muscular elements. The ovoid form differs from the elongated form only in its less length and greater breadth; but I have ascertained that it is not the result of a contraction of the animal. Perhaps it is a sexual form, perhaps also a young state of the parasite. I give this strange animal the name of *Rhopalura ophiocomæ*.

A parasite of the same group is also met with at Wimereux, in a Nemertean, *Lineus gesserensis*, O. F. Müller, which is very common, as well as its variety *L. sanguineus*, under the stones of the muddy places in the neighbourhood of the Tour de Croï. This animal differs, however, sufficiently from *Rhopalura* to constitute a distinct genus; the papilliferous ring is replaced by two very narrow ciliated rings; the median portion of the body generally has six nearly equal metameres; the terminal club is formed of three rings; the anterior part, moreover, bears a tuft of rigid cilia. There are also an elongated and an ovoid form. M'Intosh has said a few words on this parasite in his fine monograph of the British Nemerteans*; I therefore propose to give it the name of *Intoshia linei*.

Lastly a species evidently belonging to the same genus has been figured without description by Keferstejn †, who met with it at St. Malo as a parasite in the digestive tube of a Planarian (*Leptoplana tremellaris*) which is also very common at Wimereux. I give this species, which is very nearly allied to the preceding, the name of *Intoshia leptoplance*.

In the absence of sufficient embryogenical evidence, it is impossible for me at present to assign these animals to the definitive place which they must occupy in the classification. By the name ORTHONECTIDA I have desired to recall their progression, which is so characteristic that it would of itself suffice for their recognition among the parasites with which they might be confounded. Provisionally I think that the Orthonectida should be ranged above the Dicyemida and near the Gastrotricha; the latter and the degraded Rotifers also

* M'Intosh, 'A Monograph of the British Annelids: the Nemerteans,' 1874, p. 129, pl. xviii. figs. 17-19.

† Keferstejn, 'Beiträge zur Anatomie und Entwicklungsgeschichte einiger Seeplanarien von St.-Malo,' Taf. ii. fig. 8.

live in general upon animals which inhabit muddy bottoms, such as *Ophiocoma neglecta*, the *Linei*, and *Leptoplana tremellaris*. Such are *Balatro*, parasitic on the Limnicolous annelids, and *Saccobdella*, a parasite of *Nebalia* *. However, the Orthonectida possess neither the rotatory apparatus nor the mastax of the Rotifera, nor even the bifurcated tail or the pharynx of the Gastrotricha. The most interesting question to be solved in the history of our parasites is whether these animals have remained normally at the *planula*-stage, or have retrograded to this primitive state, just as the Dicyemida have returned to the *morula*-stage, in consequence of parasitism. The fact of retrogression does not seem to me to be doubtful in the case of the Dicyemida, which I regard as degraded Turbellaria (the *Dicyema* of the cuttlefish still possesses the bacilli so characteristic of the skin of the Planarians). The proofs of the degradation of the Orthonectida are far from being so evident; and these animals perhaps represent the most interesting step in the complicated phylum of the Vermes †.—*Comptes Rendus*, October 29, 1877, p. 812.

A new Species of Chimæra found in American Waters.

By THEODORE GILL.

One of the most unexpected discoveries recently made in American ichthyology is that of a species of the genus *Chimæra*, of which a specimen has lately been sent to the Smithsonian Institution. It was caught south-east of the La Have bank, in lat. $42^{\circ} 40' N.$, long. $63^{\circ} 23' W.$, at a depth of 350 fathoms, with a bait of halibut. An attentive comparison of the specimen with individuals of the European *Chimæra monstrosa* renders it evident that it does not belong to that species, but is an entirely distinct specific form. It may be named *Chimæra plumbea*, and diagnosed as follows:—

Chimæra plumbea.

A *Chimæra* with the snout acutely produced; the anteorbital flexure of the suborbital line extending little above the level of the inferior margin of the orbit; the dorsals close together; the dorsal spine with its anterior surface rounded; the ventrals triangular and pointed; the pectorals extending to the outer axil of the ventrals; and the colour uniformly plumbeous.

By these characters the species is readily separable from the *Chimæra monstrosa* and other species of the genus.—*Bulletin of the Philosophical Society of Washington.*

Note on the Habits of Young Limulus. By ALEXANDER AGASSIZ.

Mr. C. D. Walcott has called attention to the fact that when collecting fossils he finds large numbers of Trilobites on their back ‡;

* Claus still places *Saccobdella* among the Hirudinea; and this error has unfortunately not been corrected in the French translation of his treatise on Zoology.

† The preceding investigations were made at the Laboratory at Wimeureux, in September and October of the present year (1877).

‡ Ann. Lyc. Nat. Hist. xi. p. 155, 1875; Twenty-eighth Report N.Y. State Museum, Dec. 1876.